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### Effect of carbon doping on the structural, optical and electronic properties of zinc oxide nanoparticles synthesized by pneumatic spray pyrolysis technique.

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## Abstract content <br> &nbsp; (Max 300 words)<br><a href="http://events.saip.org.za/getFile.py/starget="\_blank">Formatting &<br>Special chars</a>

This work reveals the effect of doping on the structural, optical and electronic properties of zinc oxide nanoparticles synthesized by pneumatic spray pyrolysis technique (PSP) using zinc ethoxide as the precursor. The prepared samples were characterized by XRD, HRTEM, SEM-EDX, UV-Vis spectroscopy,Four point probe (I-V characterization) and Combined Confocal Raman & AFM spectroscopy. Raman spectroscopy (RS) analysis has revealed that the un-doped ZnO and doped ZnO samples have a characteristic Raman optic modes at 325 per cm, 373 per cm, and 432 per cm belonging to wurtzite ZnO structure. The XRD patterns of un-doped and doped ZnO also exhibited the characteristic peaks of hexagonal wurtzite structure. The in cooperation of Carbon species into ZnO lattice has been cross examined by monitoring the peaks positions of the (100), (002) and (001) planes. These three mains peaks of Carbon doped ZnO NPs show a peak shift to higher 2 theta degrees values which indicates substituional doping in zinc oxide samples. XRD analysis has revealed that the PSP synthesized nano particles have particles sizes ranging from 9.60 nm for Undoped to 9.96 nm for 0.015M C-ZnO samples. EDAX spectra of both undoped and doped ZnO nanoparticles have revealed prominent peaks at 0.51 keV, 1.01 keV, 1.49 keV, 8.87 keV and 9.86 keV. Peaks at, X-ray energies of 0.51 keV and 1.01 keV respectively represent the emmisions from the K-shell of oxygen and L-shell of Zinc. The occurrence of these peaks in the EDAX endorses the existence of Zn and O atoms in the PSP prepared samples.

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Yes

#### Level for award<br>&nbsp;(Hons, MSc, <br> &nbsp; PhD, N/A)?

MSc

#### Main supervisor (name and email)<br>and his / her institution

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Y

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